

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION**

ELNORA CARTHAN, et al.,

Plaintiffs,

v.

RICK SNYDER, et al.,

Defendants.

Case No. 5:16-cv-10444-JEK-MKM

Hon. Judith E. Levy
Magistrate Judge Mona K.
Majzoub

**DEFENDANTS VEOLIA NORTH AMERICA, LLC, VEOLIA NORTH
AMERICA, INC., AND VEOLIA WATER NORTH AMERICA
OPERATING SERVICES, LLC’S MOTION TO EXCLUDE THE
TESTIMONY AND DECLARATION OF DR. PANAGIOTIS (PANOS) G.
GEORGOPOULOS**

Pursuant to Federal Rules of Evidence 702 and 402, Defendants Veolia North America, LLC, Veolia North America, Inc., and Veolia Water North America Operating Services, LLC (collectively, VNA) move to exclude the testimony and declaration of Dr. Panagiotis (Panos) G. Georgopoulos.¹ The Court should exclude Dr. Georgopoulos’s opinions because they are not based on a reliable methodology or on sufficient facts or data. The Court should also exclude Dr. Georgopoulos’s

¹ VNA submits this motion to exclude expert testimony in conjunction with its opposition to Plaintiffs’ motion for class certification. VNA reserves the right to raise additional objections to the testimony of Plaintiffs’ experts if the Court grants class certification.

opinions because they are based on modeling that does not fit the Plaintiffs' theory of the case, and therefore are not relevant.

As Local Rule 7.1(a) requires, VNA conferred with Plaintiffs' counsel concerning this motion. After VNA explained the nature and legal basis for the motion, Plaintiffs' counsel said that they would oppose it.

Respectfully submitted,

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Dated: January 7, 2021

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**DEFENDANTS VEOLIA NORTH AMERICA, LLC, VEOLIA NORTH
AMERICA, INC., AND VEOLIA WATER NORTH AMERICA
OPERATING SERVICES, LLC'S BRIEF IN SUPPORT OF THEIR
MOTION TO EXCLUDE THE TESTIMONY AND DECLARATION OF
DR. PANAGIOTIS (PANOS) G. GEORGOPOULOS**

STATEMENT OF THE ISSUE PRESENTED

1. Should the Court exclude the testimony and declaration of Dr. Panagiotis (Panos) G. Georgopoulos under Federal Rules of Evidence 702 and 402 because they are not based on sufficient facts or data, there is no scientific basis for his opinions regarding children older than 7 years old, and they are based on modeling that does not fit Plaintiffs' theory of the case?

VNA answers: "Yes."

Plaintiffs answer: "No."

CONTROLLING OR MOST APPROPRIATE AUTHORITIES

Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993)

Greenwell v. Boatwright, 184 F.3d 492 (6th Cir. 1999)

Newell Rubbermaid, Inc. v. Raymond Corp., 676 F.3d 521 (6th Cir. 2012)

Palmer v. Asarco Inc.,
No. 03-cv-0498, 2007 WL 2298422 (N.D. Okla. Aug. 6, 2007)

Palmer v. Asarco Inc.,
No. 03-cv-0498, 2007 WL 2302584 (N.D. Okla. Aug. 7, 2007)

Pride v. BIC Corp., 218 F.3d 566 (6th Cir. 2000)

Tamraz v. Lincoln Elec. Co., 620 F.3d 665 (6th Cir. 2010)

Fed. R. Evid. 402

Fed. R. Evid. 702

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INTRODUCTION

Dr. Panagiotis (Panos) G. Georgopoulos is a chemical engineer and professor whose testimony is offered by Plaintiffs to show that members of the minors subclass had elevated blood lead levels as a result of exposure to lead in Flint drinking water. Dr. Georgopoulos performed mathematical modeling to demonstrate that various increases in water lead levels can cause corresponding increases in blood lead levels. But Dr. Georgopoulos's opinions do not demonstrate that all members of the minors subclass actually had elevated blood lead levels. Dr. Georgopoulos's modeling is based on hypothetical assumptions—not on data about actual water lead levels or actual blood lead levels in Flint. He also has no scientific basis for those assumptions, especially with respect to his opinions about children older than 7 years old.

Further, his opinions are not relevant because they do not fit either the class definition or Plaintiffs' theory of liability. Dr. Georgopoulos did modeling that assumed continuous exposure to lead over a 90-day period. But Plaintiffs defined the minors subclass to include children exposed to lead through the drinking water for only 14 days within a 90-day period. That makes his model overestimate the effects of exposure. Also, his modeling relates only to children through 7 years old, but Plaintiffs include children up to 10 years old in the proposed subclass. That

likewise presents a fit problem. The Court therefore should exclude Dr. Georgopoulos's opinions.

BACKGROUND

Plaintiffs seek to certify a minors subclass consisting of "all children who, during the period from May 1, 2014 to January 5, 2016, were (a) in utero or between the ages of 0 to 10 years old, (b) lived in an identified residence or attended an identified school or day care, and (c) were exposed through ingestion to unfiltered Flint public water at such residence, school or day care for at least 14 days within a 90 day period." Pls.' Mot. for Class Certification xii, ECF No. 1207, PageID.34436 (Class Cert. Mot.).

Plaintiffs offer Dr. Georgopoulos to opine about the blood lead levels of children who lived at addresses identified by Dr. Goovaerts as places of likely exposure to lead. Dr. Georgopoulos asserts "that those young children exposed to lead-contaminated water at the addresses identified by Dr. Goovaerts would more likely than not have had elevated blood lead levels." Class Cert. Mot. 75, PageID.34512; *see* Georgopoulos Decl. ¶¶ 11, 14, ECF No. 1208-137, PageID.37956, 37959 (Decl.).

Significantly, Dr. Georgopoulos does not attempt to measure blood lead levels in any members of the minors subclass attributable to exposure to lead in drinking water. Instead, he estimates the increases in blood lead levels that would result from

hypothetical increases in water lead exposure for *hypothetical* subjects, using various assumptions. See Decl. ¶¶ 15(a)-(b), 16(b), 16(d)-(e), PageID.37961, 37963-37965. Dr. Georgopoulos uses the U.S. EPA’s Integrated Exposure Uptake Biokinetic (IEUBK) model and All Ages Lead Model (AALM) to make those estimates. *Id.* ¶ 15(a)-(b), PageID.37961.

Dr. Georgopoulos’s modeling is, in his words, “hypothetical,” “preliminary,” and “generic.” Ex. 2, Georgopoulos Dep. 52:22-53:1, 54:7-12, 54:23-55:2, 79:22-25, 99:25-100:3, 147:25-148:2 (Dep.). It does not account for actual water lead exposure of Plaintiffs, variability in duration of lead exposure, or variability in exposure to lead from sources other than water. *Id.* at 47:1-23, 57:8-18, 78:2-21, 86:23-87:2, 128:25-129:13, 143:10-144:18. Dr. Georgopoulos agrees that, if those factors were considered, blood lead levels in individuals would vary as compared to the modeled estimates. *Id.* at 53:10-54:5, 148:7-12. Further, because the IEUBK model has been promulgated and calibrated for use only with respect to children up to 7 years old, Dr. Georgopoulos had no basis for modeling the effects of water lead exposure on blood lead levels of children older than 7 years old. Neither does it account for physical differences among the class members, which impacts the extent to which exposure to lead in water results in increased lead levels. Decl. ¶ 16, PageID.37969.

Dr. Georgopoulos's opinions and modeling do not match the definition of the minors subclass. To be in the minors subclass, a person must have been exposed to unfiltered Flint water for 14 out of 90 days between May 1, 2014, to January 5, 2016. Class Cert. Mot. xii, PageID.34436. Yet Dr. Georgopoulos's opinions are based on exposure over 90 days, not a minimum of 14 days within a 90 day period or any other duration less than 90 days. Dep. 94:15-18. And he performed no modeling for children older than 7 years old. *Id.* at 72:21-73:4.

LEGAL STANDARD

Courts carry out the "basic gatekeeping obligation" of ensuring the "reliability and relevancy of expert testimony." *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147, 152 (1999). A qualified expert may provide opinion testimony only if it will "help the trier of fact to understand the evidence or to determine a fact in issue." Fed. R. Evid. 702(a). For expert testimony to meet the relevance requirement of Rule 702, there must be "a 'fit' between the testimony and the issue to be resolved by the trial." *Greenwell v. Boatwright*, 184 F.3d 492, 496 (6th Cir. 1999) (citing *United States v. Bonds*, 12 F.3d 540, 555 (6th Cir. 1993)).

The expert opinion also must be "based on sufficient facts or data," must be "the product of reliable principles and methods," and must be the result of the expert "reliably appl[ying] the principles and methods to the facts of the case." Fed. R. Evid. 702(b)-(d). In short, expert testimony must "rest[]" on a reliable foundation

and [be] relevant to the task at hand.” *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 597 (1993).

As the proponent of the expert testimony, Plaintiffs bear the burden of establishing its admissibility by a preponderance of evidence. *Nelson v. Tenn. Gas Pipeline Co.*, 243 F.3d 244, 251 (6th Cir. 2001). As explained in VNA’s opposition to the motion for class certification, district courts should rule on *Daubert* challenges to expert testimony at the class-certification stage if the plaintiffs rely on that testimony to meet the Rule 23 requirements. *See, e.g., In re FCA US LLC Monostable Elec. Gearshift Litig.*, 382 F. Supp. 3d 687, 691-92 (E.D. Mich. 2019).

ARGUMENT

I. Dr. Georgopoulos’s Opinions Are Unreliable

A. Dr. Georgopoulos’s Opinions Are Unreliable Because They Are Not Based On Any Facts Or Data Specific To This Case

In his declaration, Dr. Georgopoulos states that his “overall opinion is that children and pregnant women, and therefore their fetuses, would have had increased blood lead levels because of the change in water source” when they “consumed tap water in Flint, MI for 90 days between May 1, 2014 and January 5, 2016 if they meet Criteria 4, 5 or 6 . . . and that water was not filtered to remove lead.” Decl. ¶ 11(a), PageID.37956. To satisfy one of Criteria 4, 5, and 6, a putative class member must have lived in a home in Flint that was built on or before 1986, lived in a home with confirmed documentation of elevated tap water, or attended a school or daycare

center known to have had detectable levels of lead in the water. *Id.* ¶ 14(c), PageID.37959-37960.

Dr. Georgopoulos's opinion is based on mathematical models he uses to estimate blood lead levels corresponding to increased water lead levels using "example applications" for "hypothetical" subjects. Decl. ¶ 15(a)-(b), PageID.37961. Specifically, Dr. Georgopoulos calculated the expected geometric mean blood lead levels—that is, typical values within ranges of estimated values—at ascending levels of lead in water in the range of 1 to 300 µg/L (micrograms per liter) of lead. *Id.* ¶ 16(d)-(e), PageID.37964.

Expert testimony is permissible only if the expert witness "reliably applied the principles and methods to the facts of the case." Fed. R. Evid. 702(d). Dr. Georgopoulos did not apply any methodology to the facts of this case. He admitted that he performed his modeling without using *any* data about named plaintiffs or absent class members. During his deposition, he said that his model is merely a "preliminary demonstration" and that it is not representative of any individual. Dep. 53:17-22, 147:22-148:2. He intended to create a "generic" estimation of blood lead levels across various water lead levels. *Id.* at 52:16-53:1, 54:21-55:2.

To create his model, Dr. Georgopoulos used default values and assumptions, not actual data about class members and Flint. For example, he used default values for outdoor air lead concentration, indoor air lead concentration, time outdoors, and

diet. Dep. 57:12-18, 132:8-133:6. He assumed exposure to lead in water over 90 days. *Id.* at 86:23-87:2, 89:5-8, 89:25-90:6, 145:16-20. He assumed constant levels of exposure to lead from sources other than water. *Id.* at 76:18-23. In addition, he assumed that lead was dissolved in water rather than bound to particulates suspended in water, characterizing the lead as more readily absorbed into the blood stream. *Id.* at 147:18-22; *see* Decl. ¶ 16, PageID.37973.

Dr. Georgopoulos conceded that his model does not permit the finder of fact to determine the blood lead levels for any individual class member. He testified that “[t]he purpose of the ‘generic’ application of the model was to get an estimate screening or approximate estimate of these ranges that would be further refined in the future if we have the specific information for any particular individual.” Dep. 54:7-12. His declaration likewise states: “Though the results presented in this declaration involve hypothetical individuals and plausible exposure, if subject-specific information is collected then it could be used in the calculations for case-specific estimates.” Decl. ¶ 16, PageID.37981.

Yet specific information for Flint individuals, including for named plaintiffs, *is* available—Dr. Georgopoulos just did not use it. The information available includes blood lead levels, water lead levels, information about housing, and testimony about behavioral patterns such as tap water consumption, bottled water consumption, diet, and time outdoors. Decl. ¶ 9, PageID.37955 (Georgopoulos

declaration referring to the available data in this case, including water lead levels, the presence of lead service lines, galvanized interior pipes, and lead-soldered copper plumbing, and other factors in Flint). According to Dr. Georgopoulos, that type of data can be readily evaluated and input into the models. Dep. 40:10-22, 46:12-16. He stated that “the model can simulate exposure scenarios in which exposure to [lead] in a specific medium may occur from different sources, or at different locations (e.g., home, school, work) within a day” and that “in such simulations the concentrations of [lead] in air, water, indoor dust or soil, at each specified age, are calculated as the weighted average of contributions from all exposures that contribute to that particular exposure medium.” Decl. ¶ 16, PageID.37973.

Dr. Georgopoulos did not perform any of those individual calculations. He did not input any data into the models from any individuals in Flint to estimate specific blood lead levels. Dep. 52:16-53:1. He did not review the water lead levels at residences where named plaintiffs lived. He also did not use available information about water lead levels at daycare centers and schools in Flint. *Id.* at 47:18-23, 160:16-161:8. Dr. Georgopoulos did not even review the depositions of named plaintiffs to determine if their circumstances match his assumptions. *Id.* at 27:12-15, 30:7-10. He testified that, because the modeling was “preliminary,” there was “no point” in trying to elaborate with specific facts rather than relying on default

inputs. *Id.* at 147:20-148:2. In his words, the modeling he performed is “not an attempt to actually estimate an individual’s specific exposure.” *Id.* at 77:25-78:1.

Dr. Georgopoulos did adjust the default level of lead in soil to reflect reported levels of lead in soil in Flint. Dep. 136:10-21. But that did little to tailor his model to the circumstances of class members, because the reported levels of lead in soil vary by location within the City. *Id.* at 97:19-22, 137:19-24. Dr. Georgopoulos selected a single mid-range number from the reported soil lead levels as the input for all of the modeling estimates. *Id.* at 97:22-25, 137:9-17. Therefore, the soil lead level input into the modeling remains generic and not specific to any Flint individual.

Not only did Dr. Georgopoulos fail to use actual data from Plaintiffs as inputs to his model, he also failed to compare his model’s outputs to actual data from Plaintiffs. Although the named plaintiffs’ blood lead measurements were readily available, Dr. Georgopoulos did not compare those blood lead measurements to his modeled blood lead estimates. Dep. 41:19-24, 149:18-150:13. (Dr. Georgopoulos did refer to reported Flint blood lead measurements from other sources, *id.* at 41:25-42:6, but he had no basis for concluding that the blood lead measurements from other sources were representative of the named plaintiffs or of all other members of the minors subclass.)

Dr. Georgopoulos’s disregard of Plaintiffs’ actual blood lead measurements renders his modeling unreliable. *See Krik v. Crane Co.*, 76 F. Supp. 3d 747, 753

(N.D. Ill. 2014) (excluding expert testimony as unreliable given “experts’ wholesale failure to base their opinions on facts specific to this case”); *LeClerq v. The Lockformer Co.*, No. 00 C 7164, 2005 WL 1162979, at *4 (N.D. Ill. Apr. 28, 2005) (barring expert testimony that failed to discuss the import of, or even mention, material facts, stating that “[t]his disregard of relevant data undermines the reliability of [the expert’s] entire opinion”).

The testimony of an expert who employed a strikingly similar methodology was excluded in *Palmer v. Asarco Inc.*, No. 03-cv-0498, 2007 WL 2298422 (N.D. Okla. Aug. 6, 2007). In *Palmer*, seven minor children claimed injury due to exposure to low levels of lead from piles of mining waste blown by wind to plaintiffs’ residences in nearby towns. *Id.* at *1. Blood testing showed that each plaintiff had some amount of lead in his or her blood. *Id.* Plaintiffs retained an expert, Wayne Snodgrass, M.D., Ph.D., to testify that plaintiffs were injured by exposure to lead. *Id.* Based on another expert’s claim that lead existed in the soil at each plaintiff’s residence, Dr. Snodgrass estimated the blood lead level of a hypothetical child in similar circumstances using the IEUBK model and opined that each plaintiff should have a blood lead level of at least 15 µg/dL. *Id.* at *9. Dr. Snodgrass relied on that estimated blood lead level in forming his opinion that plaintiffs’ health had been adversely affected due to their lead exposure. *Id.*

The *Palmer* court found many problems with Dr. Snodgrass's reliance on the IEUBK-estimated blood lead level. First, he did not use any actual data from the plaintiffs: Dr. Snodgrass acknowledged that "he did not have anyone prepare IEUBK results based on the specific facts of this case. Instead, he changed certain factors in preexisting calculations to reach his results." 2007 WL 2298422, at *9. Further, there was no reason for Dr. Snodgrass to rely on modeling to estimate blood lead levels when actual testing data was available. As the court explained, "[a]side from the fact that Dr. Snodgrass did not actually run the IEUBK model to account for the specific facts of this case, there was no reason for him to estimate blood lead levels when actual testing existed." *Id.* at *10. The court excluded Dr. Snodgrass's opinions relying on the IEUBK modeling as "purely speculative" and "wholly unreliable." *Id.*

In a separate opinion in the *Palmer* case, the court excluded the testimony of another expert who opined that hypothetical IEUBK modeling showed that the plaintiffs had elevated blood lead levels. *See Palmer v. Asarco Inc.*, No. 03-cv-0498, 2007 WL 2302584 (N.D. Okla. Aug. 7, 2007). The expert was permitted to testify that lead reached the plaintiffs' residences, creating an increased risk of lead exposure. But the court did not allow the expert to testify that the IEUBK modeling showed that the plaintiffs *would have* elevated blood lead levels, because that would imply that the plaintiffs actually ingested the lead, which was outside of the expert's

expertise and not based on evidence in the record. *Id.* at *8-*9. The expert admitted that he had not looked at the blood lead levels for the specific plaintiffs in the case. *Id.* at *8.

As in *Palmer*, Dr. Georgopoulos’s use of the IEUBK and AALM models boils down to a hypothetical exercise detached from the facts of this case. Indeed, his opinions amount to nothing more than impermissible speculation. *See Tamraz v. Lincoln Elec. Co.*, 620 F.3d 665, 670 (6th Cir. 2010) (“Because the ‘knowledge’ requirement of Rule 702 requires ‘more than subjective belief or unsupported speculation,’ the testimony should have been excluded.” (quoting *Daubert*, 509 U.S. at 590)); *Cameron v. Peach Cnty.*, No. 5:02-CV-41-1, 2004 WL 5520003, at *11 (M.D. Ga. June 28, 2004) (excluding as “mere conjecture,” “overly speculative” and “without any relevant foundation” the opinion of a toxicologist that plaintiffs’ exposure to contaminated air and water created a substantial risk of adverse health effects because the toxicologist merely assumed the frequency, duration, and volume of contaminated well-water consumed by the plaintiffs); *In re Rezulin Prods. Liab. Litig.*, 309 F. Supp. 2d 531, 563 (S.D.N.Y. 2004) (excluding expert opinion as unreliable partly because the expert ignored available evidence).

Because it is not grounded in real data, Dr. Georgopoulos’s modeling is unreliable and inadmissible. *See Mohny v. USA Hockey, Inc.*, 138 F. App’x 804, 809 (6th Cir. 2005) (affirming exclusion of testimony where expert did not use the

fact-specific data but relied on assumptions and estimates); *Pride v. BIC Corp.*, 218 F.3d 566, 578 (6th Cir. 2000) (“The failure of [the] experts . . . to validate their hypotheses by reference to generally accepted scientific principles *as applied to the facts of this case* renders their testimony . . . unreliable and therefore inadmissible under *Daubert* and Federal Rules of Evidence 702 and 104.”) (emphasis added); *Oracle Am., Inc. v. Google Inc.*, 798 F. Supp. 2d 1111, 1119 (N.D. Cal. 2011) (excluding expert opinion as not based on sufficient facts for failure to tie modeling to facts in the record); *Krik*, 76 F. Supp. 3d at 753 (excluding expert opinion that was not based on facts specific to the case as unreliable).

B. Dr. Georgopoulos’s Opinions Regarding Children Over 7 Years Old Are Unreliable Because They Lack A Scientific Basis

The proposed minors subclass includes all children who meet certain requirements and who, during the period from May 1, 2014, to January 5, 2016, were in utero or between the ages of 0 to 10 years old. Class Cert. Mot. xii, PageID.34436. For his opinions regarding children, Dr. Georgopoulos relies on the IEUBK model. Decl. ¶ 15(a), PageID.37961. However, the IEUBK model has been promulgated and calibrated for use only for children up to 7 years old. *Id.* So the model was not designed to accurately predict blood lead levels for a significant proportion of the subclass, those 8 to 10 years old.

Dr. Georgopoulos admitted that the model is limited to children age 7 and under. According to Dr. Georgopoulos, “IEUBK is the only widely applied and

evaluated biokinetic model for lead biokinetics in children.” Decl. ¶ 15(a), PageID.37961. The IEUBK “model is designed to calculate blood levels between zero and seven years old.” Dep. 73:7-8. Dr. Georgopoulos explained that “IEUBK was specifically developed with data from developing children aiming to capture the biokinetics of lead in ages from a few months up to seven years old.” *Id.* at 142:11-14. The model is age-dependent and incorporates information for dozens of different parameters that reflect biological changes over the period of 0 to 7 years of age. *Id.* at 71:15-24, 73:9-12.

For example, the model includes age-dependent values for time spent outdoors and indoors, Decl. ¶ 16, PageID.37967; a parameter for the capacity-limited absorption process that is age-dependent, *id.*; age-dependent fractional lead absorption rates, *id.*; simulations of the absorption process from the gastrointestinal tract that are governed by age-dependent absorption fractions, *id.* ¶ 16, PageID.37973, 37976; bone transfer coefficients that vary with age, reflecting age-dependence of bone turnover, *id.* ¶ 16, PageID.37978; and rates of deposition of lead in bone surface that change with age, *id.*

The problem here is that the proposed subclass includes children older than 7 years of age. And Dr. Georgopoulos provides no evidence showing how exposure to lead in water affects blood lead levels in children older than 7. Dr. Georgopoulos admits that he does not have “a reliable tool for calculating exposures for ages above

seven years.” Dep. 73:15-17. He did not even attempt to conduct any modeling for children older than 7. *Id.* at 73:5-8, 74:19-22. Indeed, he has not used the IEUBK model for children over 7 in this case or at any other time. *Id.* at 74:23-24. And he is not aware of any peer-reviewed scientific literature on the extent to which the model can be used to reasonably estimate blood lead levels for children from ages 8 through 10. *Id.* at 74:5-10.

Dr. Georgopoulos does not offer any other estimates for blood lead levels in children over 7 years of age. He offers only generalities and unfounded assumptions. Without citing anything in support, he states that “IEUBK-calculated estimates of blood levels in 7 year old children will be considered as reasonable first approximations of blood levels in children of somewhat older age.” Decl. ¶ 15(a), PageID.37961. At his deposition, he suggested that “one can reasonably state that the expected changes in blood levels would be similar though a little lower to those experienced by children seven years old.” Dep. 73:17-20. That is pure speculation. The model he relies on for childhood blood lead levels is based only on data for children up to 7 years old and was promulgated by U.S. EPA only for children up to 7 years old. *Id.* at 71:15-24, 73:9-12, 142:11-14; Decl. ¶ 16(a), PageID.37963. It is so limited for a reason: the underlying biokinetics of children older than 7 are very different from those under 7, so children older than 7 are likely to absorb lead at different rates from children under 7. Ex. 3, Finley Report 36. In fact, Dr.

Georgopoulos acknowledged at his deposition that using the model for children over 7 years old is likely to overestimate blood lead levels. Dep. 73:17-20, 74:1-4.

Dr. Georgopoulos testified that the inclusion in the subclass of children up to 10 years old was based on the opinion of Dr. Hu regarding the ages of children with the highest potential for health effects of exposure to lead. Dep. 65:11-18, 73:12-15. But Dr. Hu also concedes that the IEUBK model “really only is intended to model blood lead levels through age 7, not through age 10.” Ex. 4, Hu Dep. 292:20-22. Dr. Hu chose to include children over age 7 years old in the subclass based on epidemiology literature regarding health effects of lead on IQ in children older than 7. *See id.* at 292:23-293:1.

Dr. Georgopoulos cannot use Dr. Hu’s opinion to extrapolate IEUBK-modeled blood lead estimates of children up to age 7 years old to children over 7 years old. Dr. Hu did not provide any opinion about the effect of exposure to increased water lead on blood lead levels in children ages 8 to 10; he relied on studies about effects on IQ—a completely different topic. *See* Hu Decl. ¶ 26, ECF No. 1208-90, PageID.35905. Whether lead can cause IQ effects on children older than 7 years of age is not relevant to and provides no support for Dr. Georgopoulos’s opinions regarding the effect of exposure to lead in water on blood lead levels. That “improper extrapolation” is a “red flag[]” that “caution[s] against certifying an

expert.” *Newell Rubbermaid, Inc. v. Raymond Corp.*, 676 F.3d 521, 527 (6th Cir. 2012).

As the Sixth Circuit has stated, a “district court judge asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being . . . speculation offered by a genuine scientist.” *Tamraz*, 620 F.3d at 677 (quoting *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 318 (7th Cir. 1996)). Because Dr. Georgopoulos lacks a scientific basis for his opinions regarding children over age 7, those opinions are not reliable and should be excluded. *See Nelson*, 243 F.3d at 253-54 (affirming district court’s exclusion of opinion testimony where expert could not “provide a valid scientific basis” for his opinion); *McLean v. 988011 Ontario, Ltd.*, 224 F.3d 797, 800-01 (6th Cir. 2000) (“[A]n expert’s opinion must be supported by ‘more than subjective belief and unsupported speculation’ and should be supported by ‘good grounds,’ based on what is known.” (quoting *Pomella v. Regency Coach Lines, Ltd.*, 899 F. Supp. 335, 342 (E.D. Mich. 1995))).

II. Dr. Georgopoulos’s Opinions And Modeling Are Not Relevant

Expert testimony also must be “relevant to the task at hand.” *Daubert*, 509 U.S. at 597. To be relevant, an expert’s opinion must help the trier of fact to understand the evidence or to determine a fact in issue. *See Fed. R. Evid. 702(a)*. “Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful.” *Daubert*, 509 U.S. at 591 (internal quotation marks omitted);

see Pride, 218 F.3d at 578 (“[T]here must be a connection between the scientific research or test result being offered and the disputed factual issues in the case in which the expert will testify.” (citing *Daubert*, 509 U.S. at 592)).

A. Dr. Georgopoulos’s Opinions And Modeling Do Not Fit The Definition Of The Minors Subclass

Plaintiffs rely on Dr. Georgopoulos’s modeling to establish that members of the minors subclass suffered injury and damages. *See* Class Cert. Mot. 60, 75, PageID.34497, 34512. Plaintiffs define that subclass as “all children who, during the period from May 1, 2014 to January 5, 2016, were (a) in utero or *between the ages of 0 to 10 years old*, (b) lived in an identified residence or attended an identified school or day care, and (c) were exposed through ingestion to unfiltered Flint public water at such residence, school or day care *for at least 14 days within a 90 day period*.” *Id.* at xii, PageID.34436 (emphases added). Dr. Georgopoulos’s opinions and modeling do not fit that subclass definition.

1. Dr. Georgopoulos’s Opinions And Modeling Relate To A Continuous Exposure Period of 90 Days, Not 14 Days Within 90 Days

As defined by Plaintiffs, the subclass consists of children who were exposed to Flint water “for at least 14 days within a 90 day period.” Class Cert. Mot. xii, PageID.34436. Dr. Georgopoulos offers no opinion on children exposed for at least 14 days within a 90 day period. Instead, his opinion is limited to children who consumed tap water for 90 days. In his declaration, Dr. Georgopoulos states: “My

overall opinion is that children and pregnant women, and therefore their fetuses, would have had increased blood lead levels because of the change in water source . . . when they consumed tap water in Flint, MI *for 90 days*” during the eligible period of exposure. Decl. ¶ 11(a), PageID.37956 (emphasis added).

Similarly, the modeling performed by Dr. Georgopoulos is based on an exposure period of 90 days, not 14 days within 90 days (or any duration other than 90 days). Dep. 86:23-87:2, 89:5-8, 89:25-90:6, 145:16-20. With respect to the blood lead level estimates derived from the IEUBK modeling, Dr. Georgopoulos was asked: “Is that true with respect to all of these numbers for all of the different age groups here, that these estimates that you’re reporting are based upon an exposure period of 90 days?” Dr. Georgopoulos answered clearly: “That is correct.” *Id.* at 86:23-87:2. He further testified that “the column that says WLL Micros Per Liter are the concentrations that the child was actually exposed over a period of 90 days approximately.” *Id.* at 89:5-8.

Dr. Georgopoulos also used a 90-day exposure period in the AALM modeling. Dep. 145:16-20. Dr. Georgopoulos’s declaration states that he used the AALM model to calculate “estimates of [blood lead levels] for females of child-bearing age, that would have occurred in association with incremental increases in water lead concentration.” Decl. ¶ 16, PageID.37980. His declaration specifically states that it contains blood lead levels “calculated after 90 days of consuming water at specified

WLLs ($\mu\text{g/L}$) for females of child-bearing age (20, 23 and 25 years old), using the AALM-Leggett Model.” *Id.* ¶ 16 tbl.2, PageID.37980; *see id.* ¶ 16, PageID.37981.

So there is a significant mismatch between Dr. Georgopoulos’s opinions and model and the subclass definition. That mismatch matters, because Dr. Georgopoulos’s use of a longer time period increases the blood lead levels over what they would be if he had followed the subclass definition. By modeling exposure over 90 days instead of 14 days within 90 days (*i.e.*, multiplying the number of days of exposure by more than 6), Dr. Georgopoulos increased the lead exposure by a factor of more than 6. Dr. Georgopoulos’s opinions and modeling thus cannot predict blood lead levels of children who were exposed for fewer than 90 days, much less only 14 days, and so his opinions and modeling are not helpful to assist the Court to determine class certification, the issue here. *See Daubert*, 509 U.S. at 591.

2. Dr. Georgopoulos’s Opinions And Modeling Do Not Relate To Children Over 7 Years Old

The proposed minors subclass definition includes children up to age 10. However, Dr. Georgopoulos’s IEUBK modeling is limited to children up to 7 years old; he provides no blood lead estimates for children older than 7. The IEUBK model is based on biological factors and biokinetic data from children up to 7 years old. Dep. 71:15-18, 73:9-12, 142:11-14. It is not designed for use with respect to children over 7 years old, and it has not been calibrated for use with respect to children over 7 years old. Both Dr. Georgopoulos and Dr. Hu admit that it is

intended to model blood lead levels through age 7, not through age 10. *See* pp. 14-16, *supra*.

Because Dr. Georgopoulos's modeling does not fit the proposed subclass definition, his modeling and opinions are not helpful to the trier of fact with respect to children older than 7 years of age. Expert testimony should be excluded when it does not fit the theory of the case. *See Daubert*, 509 U.S. at 591-92 ("Rule 702's 'helpfulness' standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility."); *Cates v. Whirlpool Corp.*, No. 15-CV-5980, 2017 WL 1862640, at *12-*13 (N.D. Ill. May 9, 2017) (excluding opinion of plaintiffs' expert in putative class action because it did not fit plaintiffs' theory of the case and did not help the court determine whether there was a common question for class certification). The U.S. Supreme Court made that point in *Comcast Corp. v. Behrend*, 569 U.S. 27 (2013), where it held that a district court had erred in certifying a class in an antitrust case based on expert testimony, where the expert's model did not fit the plaintiffs' remaining theory of liability and therefore could not measure damages on a class-wide basis. *Id.* at 35-38.

In sum, Dr. Georgopoulos's modeling and opinions do not fit Plaintiffs' theory that the minors subclass includes: (1) children who were exposed for only 14 days within a 90 day period and (2) children older than age 7. Accordingly, his opinions should be excluded. *See Pride*, 218 F.3d at 578 ("Rule 702 requires that

the expert's testimony assist the trier of fact. This requirement has been interpreted to mean that scientific testimony must 'fit' the facts of the case, that is, there must be a connection between the scientific research or test result being offered and the disputed factual issues in the case in which the expert will testify.”).

B. The Modeling Does Not And Cannot Establish Injury And Damages For Members Of The Minors Subclass

Plaintiffs rely on Dr. Georgopoulos to support their assertion that “reliable methods exist for showing . . . damages using evidence that applies class-wide within the proposed Subclasses.” Class Cert. Mot. 60, PageID.34497. Specifically, they assert that “[c]lass-wide evidence will demonstrate that Defendants’ conduct caused elevated lead exposure in water, the ingestion of which caused common injuries to the children in the Minors Subclass.” *Id.* at 73, PageID.34510.

Dr. Georgopoulos’s modeling, however, does not provide that proof; it does not show whether any member of the minors subclass suffered injury and damages as a result of exposure to lead in water. His modeling was based on defaults, hypotheticals, and assumptions—not facts relating to particular Plaintiffs. As a result, he provides no evidentiary basis to conclude that every (or any) member of the minors subclass has blood lead levels consistent with the modeled estimates.

The blood lead levels estimated by the IEUBK and AALM models depend on the data inputs. That is, when the input data changes, the estimated blood lead levels also change. Dep. 53:12-16. Dr. Georgopoulos agreed that “to the extent that there

were individual members of the class that had different exposure times or . . . different concentrations of lead in the soil and the dust in their environment, [their blood lead levels] would vary . . . in terms of the estimates from the model.” *Id.* at 53:23-54:5. That variation is expected and is an insurmountable obstacle to proving class-wide injury. For example, while Dr. Georgopoulos used a 90-day exposure period in his modeling, “in reality the amount of time required to achieve a quasi-steady state in any individual or any age group can vary.” *Id.* at 93:16-21.

Indeed, Dr. Georgopoulos admitted that his modeling does not establish the actual blood lead level for any member of the minors subclass, much less every member. He testified that the modeling was designed to produce only a “screening” or “approximate estimate of [blood lead level] ranges” that would be further refined in the future using specific information for any particular individual. Dep. 54:7-12; *see* Decl. ¶ 16, PageID.37981 (stating that the modeled estimates involve merely “hypothetical individuals and plausible exposure”). His modeling therefore could not demonstrate blood lead levels for the entire class, even if he used real values as opposed to hypothetical ones.

In fact, for minors, Dr. Georgopoulos did not calculate specific blood lead levels at all. He instead calculated geometric means (*i.e.*, typical values) of ranges of estimated blood lead levels. Dep. 79:22-80:1; Decl. ¶ 16, PageID.37970. The IEUBK recognizes that, due to so much individual variability, estimated blood lead

levels for a population of children under any given hypothetical scenario are likely to fall in a distribution around the geometric mean. Dr. Georgopoulos used a standard deviation of 1.6, which the EPA recommends. Dep. 80:3-15.

Because Dr. Georgopoulos's IEUBK-modeled blood lead estimates actually represent ranges, they cannot provide a basis for conclusions regarding injury and damages for any individual class member. Many of the ranges overlap with each other. Ex. 3, Finley Report 48. So no subclass member's actual blood lead level can be determined using the estimates modeled by Dr. Georgopoulos. And for more than half of the hypothetical water lead level increases, the blood lead levels he calculates are not significantly different from baseline blood lead levels and thus show no injury or damages. *Id.* at 47. The estimates thus cannot provide an evidentiary basis for concluding whether any class member was injured.

In sum, Dr. Georgopoulos's modeling cannot establish that every (or any) member of the minors subclass had elevated blood lead levels as a result of exposure to lead in water or the extent of any injury or damages. Accordingly, his opinions do not "fit" the issue before the Court (whether injury and damages can be established using common evidence), are not relevant to the question at issue, and should be excluded. *See Greenwell*, 184 F.3d at 496 ("The relevance requirement ensures that there is a 'fit' between the testimony and the issue to be resolved by the trial." (citing *Bonds*, 12 F.3d at 555)); *Pride*, 218 F.3d at 578 ("there must be a

connection between the scientific research or test result being offered and the disputed factual issues in the case in which the expert will testify” (citing *Daubert*, 509 U.S. at 592)); *Cameron*, 2004 WL 5520003, at *12 (rejecting expert opinion based on refuted assumption that the plaintiffs were drinking, bathing, cooking, and gardening with contaminated water as irrelevant to the question of present or future threat of harm).

CONCLUSION

The Court should exclude Dr. Georgopoulos’s testimony and declaration.

Respectfully submitted,

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Dated: January 7, 2021

CERTIFICATE OF SERVICE

I hereby certify that on January 7, 2021, I electronically filed the foregoing document with the Clerk of the Court using the ECF System, which will send notification to the ECF counsel of record.

Respectfully submitted,

/s/ James M. Campbell

Dated: January 7, 2021